concrete construction

MAY 1958 VOL. 3, NO. 5

EDITED FOR All who are concerned with quality, JOB PLACED CONCRETE (including prestress, tilt-up, lift slab, and thin-shell)—its production, handling, forming, reinforcing, placing, finishing, and curing: CONCRETE CONTRACTORS; GENERAL CONTRACTORS; INDUSTRIAL CONSTRUCTION AND MAINTENANCE MEN; ENGINEERS; ARCHITECTS; STATE HIGHWAY ENGINEERS; READY-MIXED CONCRETE PRODUCERS.

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FEATURES

5 FORM CARE WILL PAY BIG DIVIDENDS

The simple preventive maintenance procedures recommended in this article will pay off handsomely in years of trouble-free service from prefabricated forms.

8 FOLDED SLAB ROOFS

Here's a daring combination of site precasting and thin-shell concrete design adapted to residential construction to achieve important economies. It's a concept you're bound to hear lots more of in the years ahead.

12 PRESTRESSED LIFT SLAB JOB

Although the particular project described in this article is somewhat modest as lift-slab projects go, it provides an opportunity for us to discuss some of the fundamentals of this still relatively new erection technique.

15 CONCRETE IS MY BUSINESS

A number of readers have asked us to reprint this statement of principles for concrete men in a form suitable for framing or display under desk glass. We have not succeeded in tracking down the origin, but we are sure that the original title was "Creed of a Concrete Man."

18 BONDING OF CEMENTITIOUS MATERIALS

Here's another interesting and informative discussion of the whole problem of bonding new concrete to old and plastering directly to concrete. If you are not up on some recent developments in this field, we strongly urge you to read this article.

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CONCRETE CONSTRUCTION MAGAZINE

139 No. Clark St. Chicago 2, Illinois

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WILLIAM M. AVERY
editor and publisher

JOHN M. ENGLE
co-publisher

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distribution manager

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pacific coast representatives

DUNCAN A. SCOTT & CO.

Los Angeles 57
1901 West 8th St., Dunkirk 8-4151

San Francisco
85 Post Street, Garfield 1-7950

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Subscription price: Single copies, $1.00; $5.00 per year (U.S.A.); $10.00 per year (Foreign). Accepted as controlled circulation publication at Chicago, Illinois.

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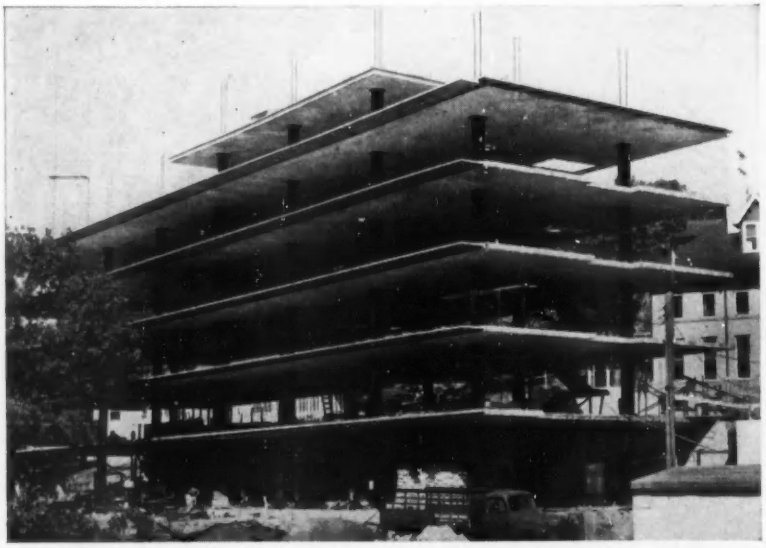
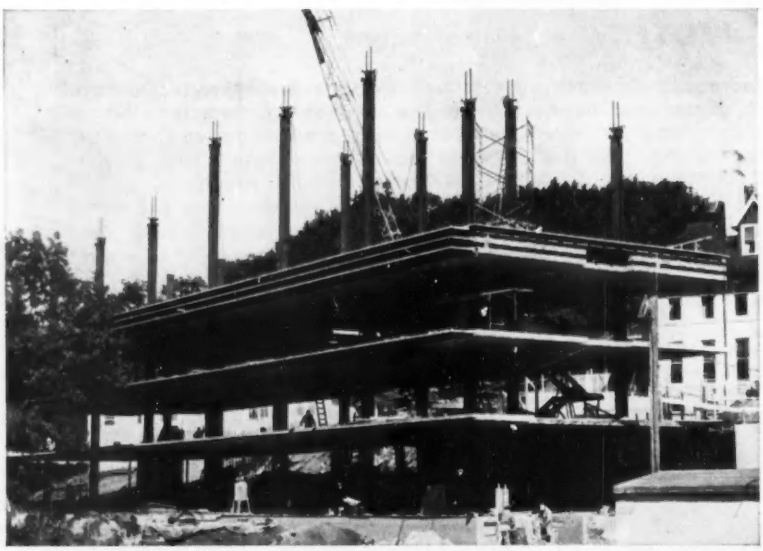
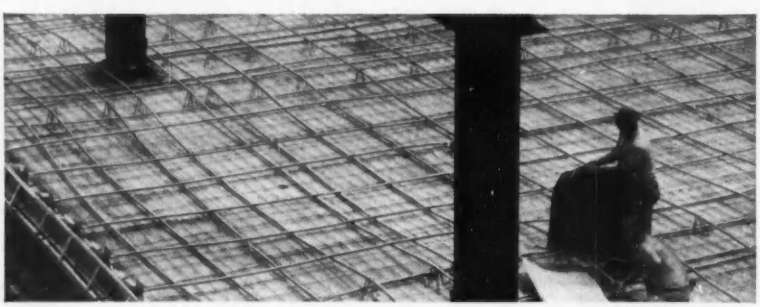


SIXTH SLAB IN PLACE: Guy wires attached to slab corners and anchored to concrete deadmen stabilized building during lifting operation. Sherwood, Mills and Smith, Stamford, Conn., architect; New England Lift Slab Corp., Boston, Mass., contractor. Concrete prestressing by A. F. Peaslee, Inc., Hartford; The Freyssinet Co., New York City, consultant; Marchant and Minges, West Hartford, Conn., structural and mechanical engineers.



FIRST STAGE LIFTING raised upper three slabs to tops of 35′ columns. Then, lower three floor slabs were raised to position. Next, columns were extended 25′, after which upper three slabs were raised to permanent position.



TRANSVERSE AND LONGITUDINAL prestressing cables for slabs consisted of ten 0.196" dia. wires in 1-¼" dia. flexible sheathing. Tendons are draped in vertical plane to vary prestress in floors and roof.

New low cost method raises 6-story lift slab

A NEW METHOD of pinning collars to the columns cut welding time and brought lifting cost down to 37 cents per sq. ft. in the 62′ high addition to Litchfield County Hospital, Winsted, Conn. Its 5 floors and roof are prestressed concrete lift slabs. After slabs were raised to correct height, 1¾" pins were inserted through the column flanges and through 1¼"-thick shear blocks which were later welded to the inside of the flanges. Steel wedges, driven between the tops of the collars and the columns, provided a rigid connection. Finally, pinned shear plates were welded to the undersides of the collars. Column erection and lifting took 4½ weeks.

Concrete slabs were cast and prestressed at ground level. The five floor panels measured 182′ x 43′; the irregular shaped solarium roof, 80′ x 41′. All were 8½" thick, requiring total of 1112 cu. yds. of specification concrete having a 28-day compressive strength of 4,500 psi. This was properly processed and delivered in 6 pours by truck mixers of certified design, capacity, mixing speed and water control accuracy.

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Photo courtesy Symons Clamp and Mfg. Company

Never throw forms off a truck. Always hand them carefully to the next man. This is one of the easiest and most important procedures in maintaining forms.

Proper Care of Forms Will Pay Year-Round Dividends

A good preventive maintenance program can add profitable years to the life of a set of prefab forms. Here are some procedures that belong in any such program.

Two pairs of hands are better than one in moving forms into place for a pour. Care here not only increases the life of the form, but it assures better alignment.

ACQUIRING A SET of factory-built forms represents a sizable investment on the part of the contractor, and if he is to reap the maximum return on this outlay, it is imperative that he adopt good maintenance procedures right from the start. There was a time when taking care of forms was looked upon as a kind of "busy work"—something to give a good crew to do during slack periods to hold them together. But today more and more cost conscious contractors are making maintenance a part of the daily routine—done so often and so regularly that it becomes a habit.

Cleaning is undoubtedly the most important part of this routine. The frames and metal parts, if any, should be thoroughly scraped to remove any

concrete deposits which may have accumulated. This is especially important in the case of all-metal frames. A clean form is essential for efficient performance. Frames should also be inspected regularly for wear and tear. On a wood frame look for split or damaged lumber that should be replaced.

Next the plywood face should be cleaned. A good scraper is the best tool for this job, but care must be taken to avoid gouging or damaging the face. When the plywood face is thoroughly cleaned, a good oil preservative should be applied. This will not only increase the life of the forms as much as 50 percent, but it will decrease stripping time and greatly improve the appearance of the concrete.

Cleaning and applying an oil preservative is a simple operation that requires very little time and almost no equipment, but it pays big dividends.

Careful inspection of forms pays off. Damaged frames or cross members should be replaced, as this workman is doing.

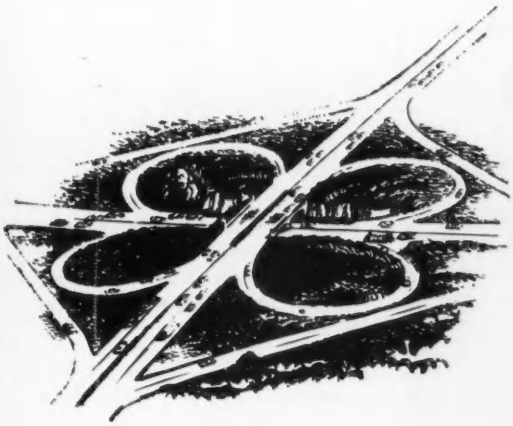
Once the forms have been cleaned and the preservative applied, they should be stored in a clean, dry place and at a slight pitch for run off. Ideally, strips of wood should be placed between forms to promote the evaporation of moisture.

If it is necessary to reverse or replace the plywood, here is the procedure recommended for a wood-ply form. First remove bolts or rivets from the backside of the forms. Next, drive masons chisel between plywood and frame where nailed. A three-pound sledge is suggested to hammer the chisel. After several nails have been cut this way, insert wooden wedges between plywood and frame to speed the operation. In re-nailing the plywood figure three nails per square foot or a pound of nails per 26 square feet. Drive nails every six inches along the frame. Drive the rivets or add bolts last. Rivets are driven against a steel plate so that the ends will curl. Steel plate should be placed above old form supported by saw horses. Using this method plywood may be reversed or changed at low cost, making it possible to obtain as many as 500 or more uses out of a frame.

Maintenance is not something that should be taken care of after a job is completed. Like safety, it should be practiced during every working hour. For example, forms should never be dumped or thrown from a truck; they should be passed from man to man or to the stack. Every time you throw or dump a panel you run the risk of weakening it, jarring it out of alignment or even breaking a corner that will have to be replaced.

Hardware used to join or brace prefab forms can also become a costly item unless good maintenance practices are adhered to. Good maintenance, in this case, involves simply cleaning excessive concrete deposits from the hardware with a special solvent designed for this purpose. When stripping it is advisable to place the reusable hardware in buckets or carpenters' aprons to avoid loss.

Reputable form manufacturers are constantly seeking new materials which will lengthen the life of their products. This saving can be passed on to contractors who are willing to take the time to maintain their forms properly. END



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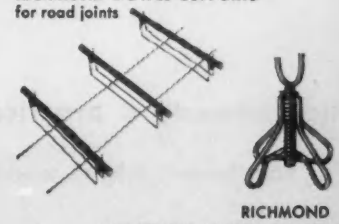

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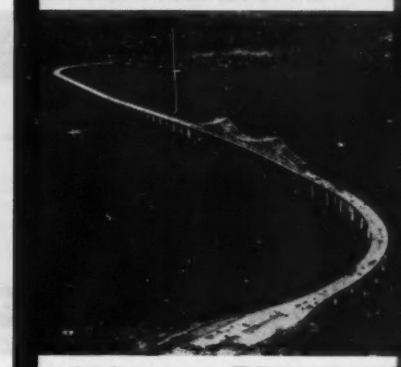

Shown here are a few of the items in the complete line of Richmond-engineered form-tying, anchorage and accessory devices for concrete construction. The Richmond Handbook describes all of them, gives wire and steel sizes used, safe loads and ultimate strength values. There is a Richmond product for every concreting need.

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Placing concrete in one of two roof forms consisting of a series of wood trusses sheathed with ¾-inch marine plywood. Each 4-inch thick section covered 400 square feet and weighed 11 tons.

BY NELSON A. FAERBER, A.I.A.

FOLDED SLAB ROOFS

Are they already a practical reality for low-budget construction?

FILE: THIN SHELL

IN THIS DAY of advanced engineering techniques and dynamic architectural design, it is not unusual to encounter many fine examples of thin-shell concrete construction. However, to the average architectural firm, these monuments can only be admired from a distance; unfortunately these feats are usually archieved only with large construction budgets. Rare indeed is the average commercial or residential budget which allows the architect to consider a thin-shell concrete structure.

During the designing of a residence for Mr. and Mrs. John Cowles, of Naples, Florida, it was decided to investigate all means of economy associated with present concrete construction methods. In analyzing the various methods, including lift-slab, precasting, and thin-shell design, it was decided that the individual economies of these methods might successfully be combined into one new and more economical type of construction. This resulted in the development of the

principle of site precasting sections of a folded slab design on a ground form and lifting them into place.

The building was designed in the shape of an octagon, incorporating 8 separate gables, each engineered as a folded slab. In order to reduce both labor and materials for forming, two forms were constructed on the ground, utilizing a series of wood trusses sheathed over with ¾-inch marine plywood. This allowed the casting of four sections of the roof on each form, using the lift-slab principle of stacking one slab on top of the other. Separation was accomplished by means of polyvinyl film. The reinforcing steel was placed on one form, while a roof section was cast on the other form the same day, thus allowing a casting schedule of one section per day. The average labor time of pouring and finish troweling one section was little more than that required for placing a slab on grade of similar area. The 400-square foot sections were designed 4 inches thick, using 3750 psi concrete. Each section weighed 11 tons.

The first three sections which were cast employed concrete inserts. Due to the difficulty of holding these inserts in place during casting, ½-inch steel plates, threaded to receive ¾-inch bolts from the lifting apparatus, were substituted for the remaining sections. The edge of each section was cast in a key to accommodate a 1½-inch grouted joint at each valley. Each slab was cast 3 feet short of the total radius dimension of the roof, to allow for a 6-foot octagonal skylight. After the sections were erected a reinforced concrete tension curb was poured around the skylight, receiving three No. 5 bars turned up from each of the 8 slabs.

The slabs rested directly on 6-inch lally columns with 12- by 12-inch bearing plates at the top. A spacer block 1½ inch wide was placed on top of each of the bearing plates to prevent the adjoining section edges from compressing by contact. Around the 8 exterior columns a peripheral 1-inch tie-rod with a turnbuckle at each bay was employed. The turnbuckles allowed plumbing of columns, and were welded after all slabs were in place. Prior to erection of the slabs temporary X-bracing and 6- by 6-inch wood columns were used beneath the ridge of each section to lessen the initial thrust to the columns before the adjoining slabs were set in place.

In this first project an erection time

SITE PRECAST FOLDED SLAB ROOF
Summation of Construction Costs

I FORMWORK

Material	$1,067.00	
Labor	1,041.00	
Total Cost	$2,108.00	$ .65 per square foot

II SUPPORTING STRUCTURE

Steel Columns, Tie Rods & Lifting Beams, etc.		
Total Cost	$ 768.00	$ .24 per square foot

III CASTING SLABS

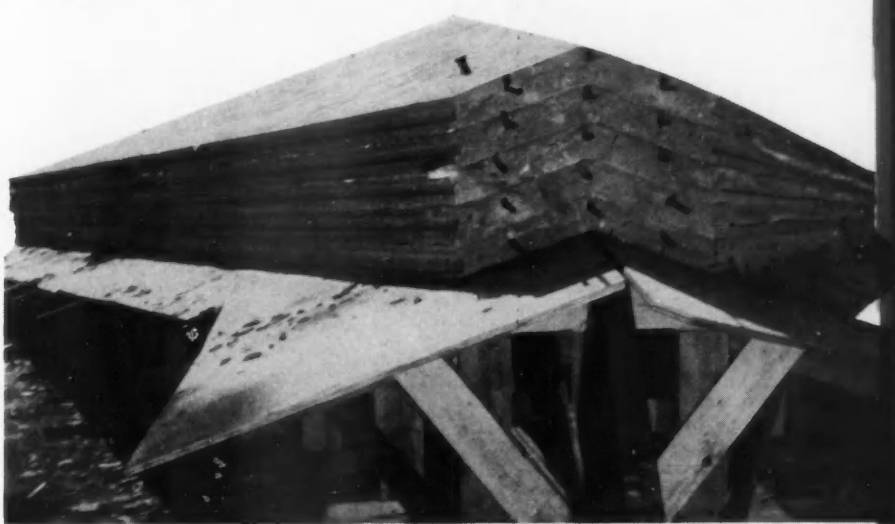
Material:		
Steel	$1,759.00	
Conc.	805.00	
Labor	720.00	
Total Cost	$3,284.00	$1.03 per square foot

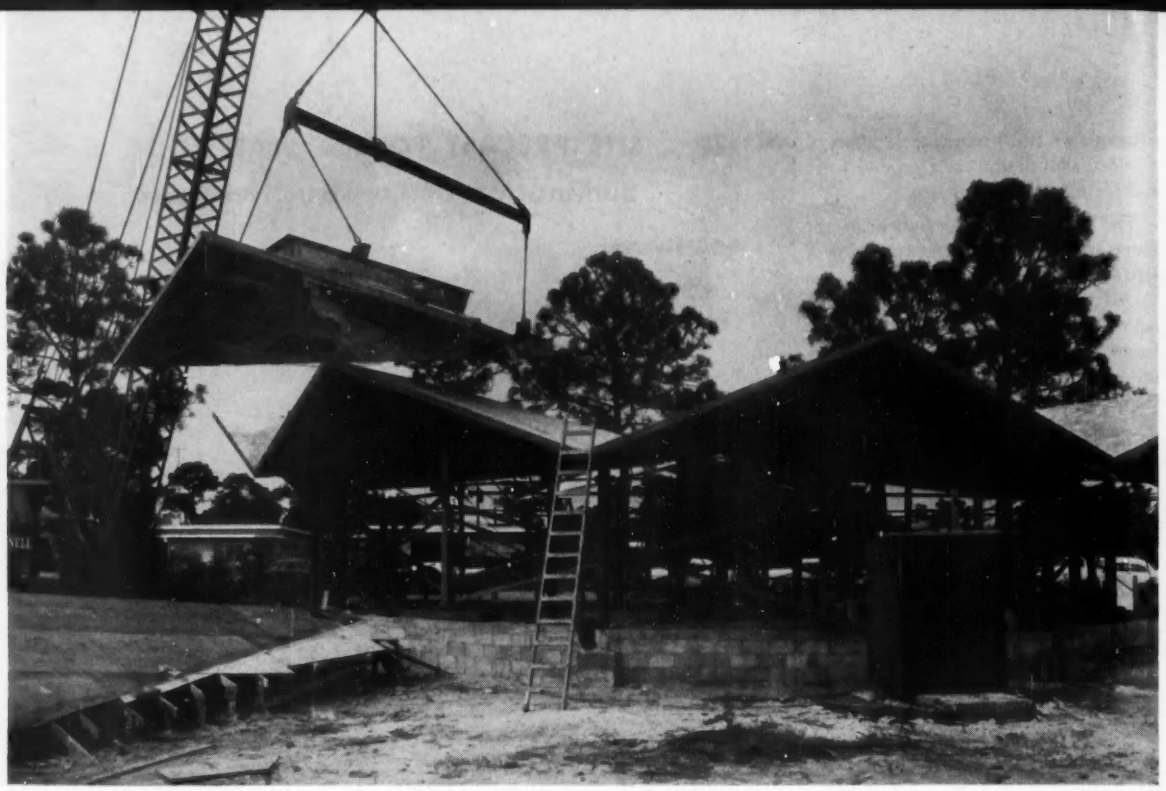
IV ERECTION

Total Cost	$1,056.00	$ .33 per square foot

Total Construction Cost = $7,216.00 @ 3200 square foot = $2.25 per square foot

Roof slabs were cast one on top of the other as in the lift-slab method of construction. Sheets of polyethylene film were used to facilitate separation. Note the keyed edges which were formed to accommodate 1½-inch grouted joints between adjacent sections.





Placing the last of 8 sections which formed the folded-slab roof of the octagonal building. Each section was cast 3 feet short of the total radius of the roof to provide a 6-foot octagonal skylight in the center.

of 28 hours was required. Unfortunately it was found necessary to make slight alterations and adaptations to the lifting apparatus for each concrete section, and many hours of erection time could have been eliminated by the use of a more accurate template for locating the lifting plates. This item, plus other small difficulties correctable in future projects, should easily cut the erection time in half.

In spite of these problems, 3200 square feet of concrete roof was installed for a cost of $2.25 per square foot of roof area, including the supporting columns. The roof surface is being finished with three coats of masonry water-repellent coating, for approximately ore-half the cost of conventional built-up roofing. In this particular design, acoustical plaster and stucco will be employed on the underside of the slabs to achieve a finished ceiling. With additional care in steel trowel finishing of the sections during the casting process, this extra expense for finished ceiling will be eliminated entirely, thus further reducing the cost of the finished roof in place.

It is the opinion of the architect that this project proves that a vast field of medium-budget construction can now benefit from the architectural and engineering advantages of precast thin-shell concrete design. END

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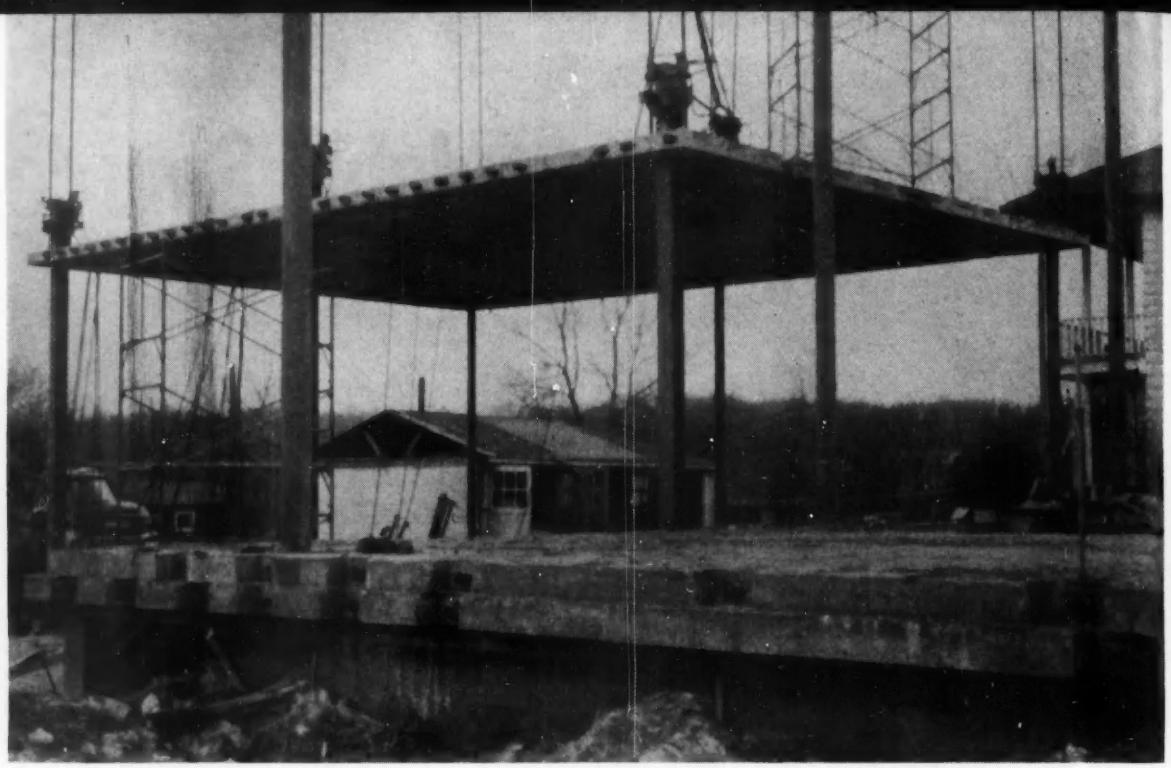

In this view the small slab for a 1-story section of a building in Hinsdale, Illinois, is already elevated, while in the foreground can be seen the two post tensioned slabs for the 2-story section ready for lifting.

PRESTRESSED LIFT SLAB JOB

CHICAGO-AREA BUILDERS have been watching with great interest the progress of a prestressed lift-slab job in the west suburban town of Hinsdale. The structure is a combination rug cleaning plant, office and store building with over-all dimensions of 60 by 160 feet. In the one-story section there is an 8-inch slab measuring 60 by 106 feet and a 7½-inch slab measuring 27 by 46 feet, while the two story section consists of two 6-inch slabs measuring 54 by 60 feet.

Although all of the concrete work was performed during one of the most severe winters in recent history, and some delays were encountered as a result, it is believed that costs will run at least 10 percent under conventional reinforced concrete. Security measures taken against the possibility of freezing included using heated ready mixed concrete (70 degrees F. at the site), adding calcium chloride at the job site, covering new work with a foot of straw and polyethylene film, and operating heaters from upwind positions whenever there was the slightest possibility of temperatures dropping into the danger zone. Pans of water were placed under the protective coverings and checked each morning to make absolutely certain that no freezing had occurred.

Prestressing was accomplished by post tensioning as soon as test cylinders reached the required strength of 4000 psi. Hand operated hydraulic jacks were used to stretch the cable strands as much as 9 inches to obtain the desired prestress.

The lift slabs were separated from the base slabs by using two coats of a paraffin and oil base parting medium preparation over the base material, the two coats applied at right angles to assure complete coverage. According to the contractor this precaution not only made it possible to separate the slabs without trouble or damage, but also resulted in the virtual elimination of honeycombing. The material also serves as a curing compound.

Although a good many lift-slab projects have been undertaken since the first building was erected by this technique in 1950, a brief description of the method might be appropriate. One of the most important things to understand about lift-slab is that it is a method of erection and not a method of design. Design principles, where floors are to be raised by the lift-slab method, are precisely the same as in any other method of construction.

The sequential steps involved in the Hinsdale project included placing footings, erecting columns, casting ground floor slabs, then casting second floor and/or roof slabs using the grade floors as forms, post tensioning the lift slabs, raising them by means of mechanical equipment, and finally securing the second floor and roof slabs to the columns by means of welding. It should be noted that prestressing is not a requirement of the lift-slab method, although it has self-evident

advantages in increasing economical span lengths and holding down required slab thicknesses.

The columns used in lift slab work may be of steel or concrete—either precast or site cast. In either case, collar connectors are placed and carefully aligned around each column, reinforcing steel is placed and tied, and the concrete for the lift slab is placed and cured with the collar connectors embedded in the concrete at each column. These units not only engage the rods used in the lifting operation, but also provide the permanent means of securing the slabs to the columns.

When the concrete has attained the desired strength as indicated by test cylinders, hydraulic lifting units are mounted on the columns and connected to the slab by means of rods which engage the connectors embedded in the concrete. The actual lifting is handled from a control console which provides for the indvidual control of each lifting unit as well as for their simultaneous operation by means of a master lever.

To avoid working against the tremendous air pressure which resists the separation of the slabs, the lifting units are first operated in sequence, breaking the slab loose at each column until it is finally free and suspended only a fraction of an inch above the base slab. This procedure admits air between the slabs gradually as the separation is accomplished at each column, thus greatly reducing the force that must be resisted by the lifting system.

As soon as the slab is free and level, the master lever at the console is opened to feed oil to all the lifting units. As the whole slab is raised vertically it is checked frequently for level and appropriate adjustments are made at the console to keep all points within the required tolerance of about ⅜ of an inch. Lifting rates appear to range from 3 to 4 inches per hour. When the desired height is reached, the slab is leveled at each column separately and secured to the column.

The general contractor for the Hinsdale lift slab project was Galvin Kennedy of La Grange, and the concrete work was sub-contracted by Concord Concrete Company. Ready mixed concrete was supplied from the Clarendon Hills plant of E. A. Keller Company. Architects for the job were Kampf & Welborn of Lincolnwood. The lift-slab work was handled by the Great Lakes Lift Slab Corp. and the Prescon System of post tensioning was used. END

Readers who would like to have additional information on the subject discussed in the foregoing article may request it by filling out one of the reader service cards in this issue.

Contractor Kennedy and Architect Welborn stand at one of the control consoles used in the lifting operations. The panel of another console is at the right.

Dodson's Digest

A capsule summary

Bill Kaiser, who's doing the concrete work on a new skyscraper, invited me down to watch the laying of the cornerstone. A time capsule was imbedded in it, to be sealed at the end of the ceremony . . . and opened in 100 years.

"This is kind of a thrill for me, Dod," he beamed, as the festivities began. "My biggest job – and the first one calling for the formality of a cornerstone!"

"You've a right to be proud, Bill," I said, "and Calcium Chloride has played no small part in your success."

"Sure," he retorted, "though you didn't really have to *sell* me on it for winter concreting. But using it in the summer just doesn't . . . "

"I know you didn't ask me here to give you a pitch on Calcium Chloride, Bill. But had you used it on this job, they probably would've laid the cornerstone a week ago. Even during warm weather, Calcium Chloride cuts initial and final set time in half. At 70°, it develops 145% greater strength in one day! You get your men in *and out* faster, your investment is returned that much sooner. You can't lose, no mat—"

"Hey, Dod!" he interrupted. "They're about to seal the capsule. Quick, give me one of your cards!"

Puzzled, I handed him a card and he ran over to the cornerstone.

"Well, that's that," he smiled, walking back, after a few minutes.

"What's what?" I asked.

"Without going into a lot of detail," he replied, "just remember that in 2058, when they open the capsule, they'll hear the taped voice of L. D. Dodson, specialist in Calcium Chloride! Matter of fact, I used it on this job, but 'egged' you into your speech for the recording!"

— L. D. Dodson

P.S. — For timely facts on how Wyandotte Calcium Chloride can help you, consult our folder, "How To Make Better Concrete Products and Ready-Mix." For your free copy, just drop me a line. *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Offices in principal cities.*

Wyandotte CHEMICALS

MICHIGAN ALKALI DIVISION

HEADQUARTERS FOR CALCIUM CHLORIDE

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Thor Motor-in-head Concrete Vibrators. Universal electric (AC or DC). Plug into any electric current source, including portable generators, for true one-man economy in transporting, setting up and operating. Motor-in-head (no power-wasting flexible shaft) delivers 15,000 V.P.M. Thor CV2 Series Vibrators available in 10- and 20-foot operator "hose" lengths.

Two Thor Generator Series to choose from for lightweight portable power at the job site. Thor's new 2500 watt DC engine-driven generator and the time-tested 1500 AC or DC models. Here's husky electric power which can go where you go easily.

Thor Power Trowel — Easiest operating trowel on the market, does a better, safer job with less crew time. Light, portable. Blade-center suspension for better troweling action. Reversible blades, positive tilt adjustment.

For increased production on the job site, lower man-hours per job, better results, specify Thor construction equipment, backed by dealer and direct factory branch authorized service throughout the world. Your dealer will show you Thor's superiority right at the job site. Thor Power Tool Co., Prudential Plaza, Chicago 1, Ill.

Thor PORTABLE POWER TOOLS

THOR POWER TOOL CO.

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Thor Vibratory Finishing Screed. Packed with features—strike-off, compact, finish concrete in one low-cost operation. Lightest screed on market. Two men can handle easily. "SlaPaction" vibration. Uses inexpensive forms or pipe rails. Stock lengths of 7', 10', 13' and 16'. Intermediate sizes to order.

For more details circle #224 on mailing card.

Concrete Is My Business

Concrete is my business. My future welfare and the well-being of my family depend on the quality of the work I do.

I have chosen concrete out of all the construction materials of the earth as the one in which to specialize. I have done this because I feel that concrete is a material of integrity. Mixed and placed with understanding hands, concrete will not fail. Therefore, the work I do well now will survive and serve long after I am gone.

Concrete walls impound billions of gallons of water for relief of a thirsty desert, or hold safe from spoilage and rodents millions of bushels of life-giving grain.

Concrete bridges the broadest rivers and holds back devouring floods from cities and towns. Concrete towers rear their proud heads toward the blue. Concrete shafts and tunnels pierce the black depths of the earth or penetrate beneath the waters.

Concrete builds a safe pathway for the darting miracles of steel, chromium and glass which link our cities and towns.

For my customers a concrete home will protect and safeguard their loved ones from the dragons of fire or the rending violence of storms day and night, in all seasons, in all climates. Concrete is strong.

For the architects whom I serve, concrete is a design medium with which they can create structures of beauty and charm, of rare delicacy and sturdy utility.

Future generations will enjoy the things we of today have wrought of concrete for it is a material of integrity and will endure.

Because I respect and love this material, I can serve my country, my community and those to come after me by doing my work intelligently and honestly, thus creating useful things that endure.

Concrete is my business. I am proud of it.

Pre-cast bridge and building construction goes up faster, safer with P&H truck cranes

From the placement of giant precast elements to concrete bucket work, you can do the job quicker, safer and at lower cost with P&H truck and crawler cranes. P&H machines have the genuine lifting power and extremely fine control you need to handle all types of concrete construction profitably.

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35-ton P&H 555 A-TC truck crane placing 28-ton concrete wall panels in construction of $2½ million tannery plant.

For more details circle #209 on mailing card.

GAR-BRO BUCKETS AND AUTOMATIC CRANE HOOKS PLACE MORE CONCRETE

NEW SPEED RECORDS are being set by a new combination of Gar-Bro equipment for handling mass concrete.

On many large projects Gar-Bro Concrete Buckets are being used with Gar-Bro's new power operated Crane Hooks. This combination delivers more concrete faster because it eliminates all the mechanical difficulties usually a part of large bucket operation.

Model A Gar-Bro Concrete Buckets have air controlled gates which are opened or closed by hook-on or pull chain operation. The new Gar-Bro Crane Hook which is trigger actuated gives the crane operator complete control. He can pick up a loaded bucket or set down the empty bucket and release it at will. There are no delays... no hook on problems, he merely picks up a loaded bucket and hoists it to dumping position where the concrete is dumped by means of a pull chain. The bucket is returned to loading position, released and another bucket is picked up.

This method of concrete handling obviously allows a manpower economy and eliminates the hazards and delays of a "hook on" man. All in all the combination of Gar-Bro Crane Hooks and Concrete Buckets increases the number of passes by the crane.

GAR-BRO MANUFACTURING CO.
Los Angeles, California • Peoria, Illinois
General Offices:
2415 East Washington Blvd.
Los Angeles 21, California

For more information write for catalog. Are you receiving your free copies of "Concrete News"? This periodical published by Gar-Bro is filled with job reports of all types and will be sent to you regularly upon request.

Gar-Bro Concrete Bucket is lowered to dumping position. Note: Crane Hook is absolutely safe; cannot open under load.

Here the Gar-Bro Crane Hook is being lowered to pick up bucket. When trigger mechanism on the hook contacts the bail, the hook closes.

Four Gar-Bro Buckets are transported from the mixer to the pour on this truck-trailer.

GAR-BRO *The world's most complete line of* **CONCRETE HANDLING EQUIPMENT**

EQUIPMENT GAR-BRO ENGINEERING SERVICE

For more details circle #207 on mailing card.

The two photographs above show the application of a liquid bonding agent to the underside of a concrete floor slab and the subsequent operation of plastering directly to the concrete without the use of wire lath or any other mechanical means of obtaining bond. Developments such as this are creating new markets for concrete construction.

Bonding of Cementitious Materials[1]

By Daniel J. Goeke[2]

TO REPAIR CONCRETE it was formerly necessary to use the costly, time-consuming method of chipping, drilling, roughening, acid washing or scarifying the old concrete base prior to aplying a slurry coat of cement to bond the new topping. Even with all the precautions that could possibly be taken, such repairs were oftentimes far from satisfactory. The picture has changed radically. With bonding materials now available it is possible to bond new toppings to old, and plaster directly to concrete or any structurally sound surface. In many cases the bonding materials prove to be stronger than the materials being bonded.

The materials being used today for bonding cementitious materials include synthetic latex emulsions, epoxy resins, and aqueous resinous emulsions of the vinyl type.

The synthetic latex emulsions are used as an admixture in cementitious materials, giving these normally brittle materials the qualities of resilience, elasticity, durability and good adhesion. New concrete can be bonded to old either by adding the latex bond to the new concrete or by using a thin mortar mixed with the latex to form a paste. The paste is applied to the old surface and the new topping applied to the base.

Epoxy adhesives[3] consist of liquid polymer, liquid epoxy resin, amine catalyst, and inert filler. By variation of the type and amount of each ingredient, innumerable variations in adhesive properties may be obtained. Epoxy adhesives permit the successful bonding of old concrete to old concrete, or new concrete to old. When using these materials, care must be taken to apply topping before the adhesives have dried out. Such materials

[1]Based on a paper presented at the Building Research Institute conference on adhesives and sealants in building, December 4 and 5, 1957.

[2]The author is vice president of the Larsen Products Sales Corporation, Bethesda, Maryland.

[3]See "Epoxy Alloys," CONCRETE CONSTRUCTION, January 1958, page 11.

differ in nature from a straight film of aqueous resinous emulsions of the vinyl type. The latter dry to a film state before topping material is applied.

The aqueous resinous emulsions of the vinyl type will bond new plaster base or finish coats to concrete, or to any structurally sound surface. The same applies to bonding concrete. These liquid plastics have a viscosity about equal to paint for the sole purpose of application. The dried film is stable when the water has evaporated, and remains flexible, free from any tendency to harden or crack. This flexibility assures both permanent adhesion and an ageless bond which never lets go. The vinyl type of bond is vermin-proof, non-toxic, non-deteriorating, incapable of supporting flame, and highly resistant to most acids and alkalies.

Films of bonding materials have sustained temperature ranges from minus 35 degrees to above 300 degrees F. without a failure in the bond. Tensile strength varies from 50 to 1200 psi, depending on the bonding material and materials being bonded together, and minimum shear strength is 175 psi.

A classic example of the strength of a bond is the test conducted by the California Highway Department using an epoxy-based adhesive to bond new concrete to old. Small concrete beams were broken in flexure. One end of each broken beam was coated with the adhesive and a new section bonded to each. The new concrete was a dry mix having a slump of 2 to 2½ inches. After curing from two to four weeks, the beams were again subjected to flexure. All breaks occurred in the concrete; the bond remained intact.

Abell-Howe Company, Chicago engineers, conducted field tests in which they used poly-vinyl acetate emulsions for bonding agents. On top of a base slab of concrete they poured an 18-inch square by 4-inch thick reinforced slab. After five days of curing, a 3700-pound pull failed to break the bond, although the entire corner of the base slab started to come up.

Why are modern bonding materials so strong? How do they work? The answers to these questions should be a matter of interest.

First, a mechanical bond is achieved by the penetration of the bonding material into the pores of the old sur-

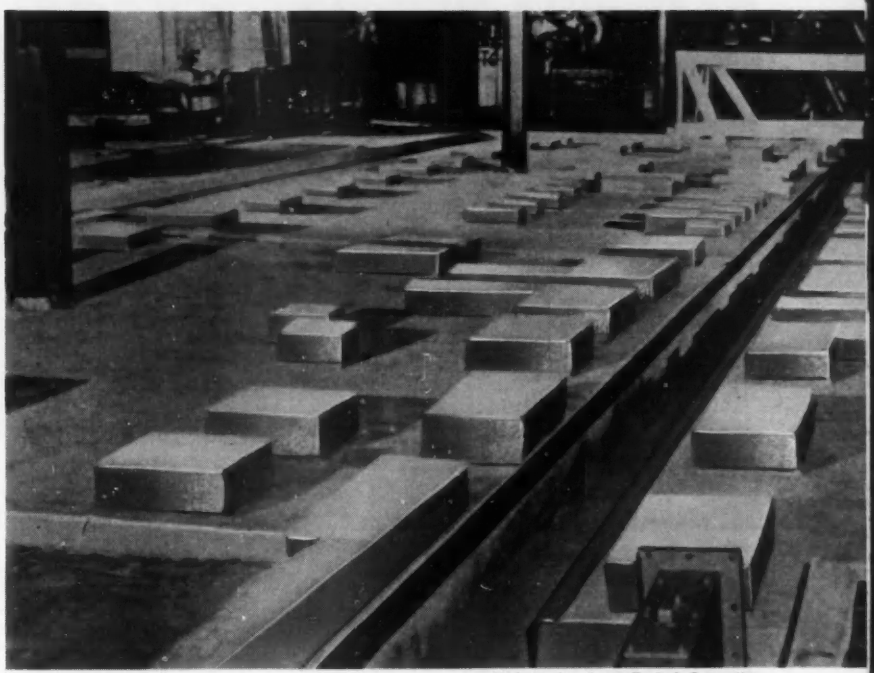

Photo courtesy Larsen Products Corporation

The box-like piers shown in this photograph were poured on top of a base slab 36 inches in thickness. The only bond provided between the piers and the base slab was by means of a bonding agent applied to the slab. Although heavy machines have operated on these piers for more than a year, there has been no failure in the bond.

With no preparation other than the application of a brushed-on liquid bonding agent, a thin topping of concrete is here being applied to a section of sidewalk. Not so long ago it was considered virtually impossible to make such repairs.

face, forming a mechanical interlock. Secondly, as the moisture evaporates from the bonding material, adhesion takes place. Thirdly, a chemical reaction takes place as the new material is applied. The bonding agent penetrates voids and forms a bond within the crystalline structure of the new concrete.

Bonding materials may be applied by brush, roller, or spray. In large areas it is advisable to spray. Using a spray saves in labor and material. One man can spray 15,000 square feet in a day with a yield of up to 650 square feet per gallon.

In new reinforced concrete slab construction, bonding agents have eliminated the costly operation of chipping, grinding and polishing concrete ceilings. Today plaster or acoustical plaster may be bonded directly to exposed concrete surfaces. After the forms have been removed, the bonding material is sprayed on without any prior preparation, then allowed to dry to the touch before plastering. The finished coat of plaster is applied directly to the coated concrete, covering fins and filling hollows by doubling back. Sometimes months elapse before the plaster is applied to the bonding agent. This in no way affects the bond.

More and more architects are specifying vinyl bonding materials because they increase flexibility in design. Now plaster can be applied directly to concrete. The problem of bonding mortar to concrete has been licked. It is now possible to use delayed toppings as thin as one-half inch bonded to the base floor. Stucco no longer calls for wire lath. Cement plaster now can be bonded to smooth tilt-up walls.

When used with quick-setting cement toppings, bonding agents permit the laying of new floors, ramps, driveways, and sidewalks, which can be used for heavy traffic within two days. The assurance of a permanent bond costs as little as 4 cents per square foot. Thus, through science, organic chemistry has solved the problem of bonding inorganic cementitious materials. END

Readers who would like to have additional information on the subject discussed in the foregoing article may request it by filling out one of the reader service cards in this issue.

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CONTRACTORS EQUIPMENT

• UP-TO-DATE DESIGNS
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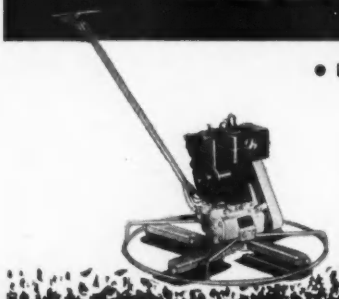

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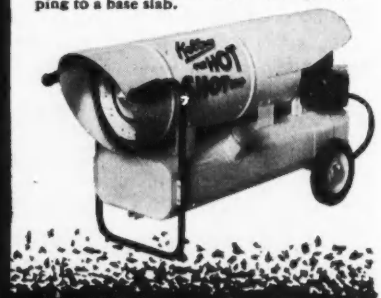
Six models to choose from... 2 de-luxe HYDRA TROWELS, 34" and 44" sizes, with fingertip blade control... and 4 super models with manually adjusted blade pitch: 24" Kelley Bantam, 29" Kelley Boy, the popular 34" Kelley Chief and the big 44" Kelley Commander... a size for every job.

POWER TAMPERS

Self-propelled... delivering 2400 impacts a minute. Two models: 18" wide shoe, and 36" wide shoe. For packing down earth backfill to maximum density next to foundations, on road-widening jobs, around culverts and in pipeline trenches. Also for finishing black-top driveways.

COMPACTORS

The new Kelley Compactor with "Compaction Control". An entirely new machine... larger, easier operating, faster and more powerful. For compaction-floating concrete floors, for keying in tough surface hardener materials, and for bonding dry-tamp topping to a base slab.



SPACE HEATERS

What a blast! From the brand new Kelley Hot Shot Space Heaters, one delivering 125,000 Btu/Hr and the other delivering 325,000 Btu/Hr. Let 'er blow outside... work goes on inside with Kelley Hot Shots! For work on walls, floors, scaffolds and hundreds of other construction jobs.

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CARBO-JET added to concrete mix in the construction of Maryland Ave., near Newport, Del.

The sixth major job on which CARBO-JET has been used by the Delaware State Highway Dept.

CARBO-JET: The quick, efficient method to darken concrete

CARBO-JET reduces glare, improves appearance of roads, walks, curbs, center islands, patios, driveways and runways.

CARBO-JET is a specially formulated carbon black, dispersed in liquid form. It is by far the easiest, and most economical way to introduce gray-to-black shades in mortar and plain or air-entrained concrete.

CARBO-JET disperses faster than ordinary cement colors. A uniformly-colored batch takes much less mixing time. There is no streaking, no color variation. Unlike ordinary colors CARBO-JET does not affect the air content of air-entrained concrete.

MANY ADVANTAGES. CARBO-JET cuts down the danger of glare. On highways and roads, traffic markers stand out. The dark color absorbs and holds heat. Ice and snow melt faster and surfaces dry in less time. The appearance of concrete is improved as oil stains are less visible.

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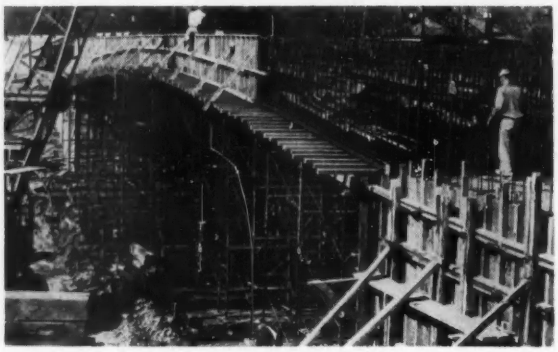
equipment tools materials

Additional free information concerning any item described in these columns may be obtained by filling out and mailing the postage-free reader service cards located between pages 16 and 17 in this issue.

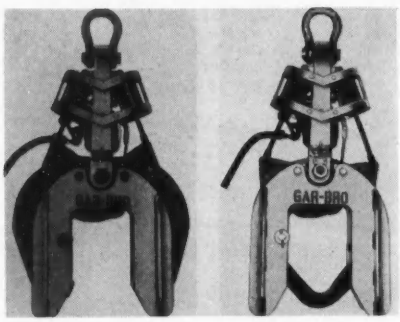


Overpass Construction

Fruin-Colnon Contracting Company found Advance shoring equipment adaptable to various shapes on uneven terrain on the Hanley Overpass job pictured here. This scaffolding is fabricated from heavy gauge tubular steel with locking devices precision-welded to the panels and braces, thus becoming an integral part of the scaffold. This feature affords faster erection without tools, a more rigid structure, easier dismantling and it eliminates the expense of lost parts. **Beaver-Advance Corporation, Ellwood City, Pennsylvania.**

Crane Hook

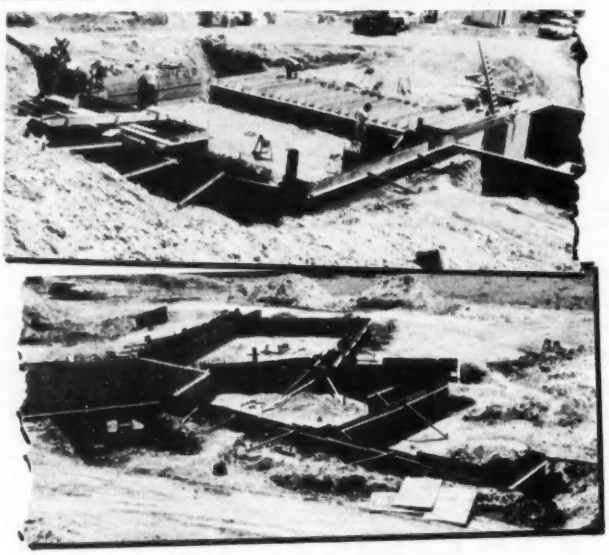
No hook-on man is needed when this 12-ton capacity crane hook is used. The crane operator simply lowers the hook so that the mechanical trigger within the hook circle contacts the bucket bail, which actuates the ratchet-type air valve that controls the opening and closing of the hook. Overlapping lifting tongs prevent opening under any load. The equipment is designed for handling 2-, 3- and 4-cubic yard concrete buckets and is also useful for other lifting work. Integral guide arms assure easy hooking. **Gar-Bro Manufacturing Company, 2415 East Washington Boulevard, Los Angeles, California.**



Gates gives you versatility, too

In addition to speed and reduced costs, Gates Forming Systems give you complete versatility! This is aptly illustrated by the intricate, luxury home foundation shown above. The foundation walls . . . with their unusual angles and offsets for fireplace supports . . . were formed entirely on piers. And, while the center section was designed with full, 10-foot-deep basement, the wings had only a 6-foot crawl space. Despite complexities, the entire foundation was efficiently formed with the same *Gates Horizontal Rod System that has been proved so successful in high speed project work!*

Whatever the job, there's a Gates System to handle it profitably—with quality results.



Complex foundation of luxury home in Cherry Hills Village, near Denver.
Architect: John Pollock
General Contractor: John Scott Construction Co.
Forming: Concrete Form Builders, Inc.

See the "Yellow Pages" for the name of your local Gates Dealer, or write:

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CC 5-58

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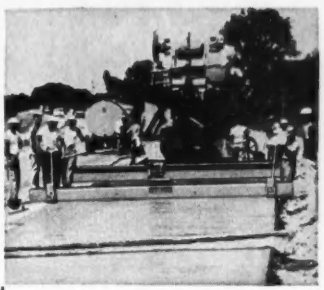
Special underslung beam construction was required for this 14-foot span since the rails were located above the surface of the concrete. Chicopee River Bridge on Massachusetts Turnpike.

Screeding Bridge Deck—Stow special 24-foot, 6-inch vibrating screed finishing outer lane. "I"-beam rail at far end is mounted above the parapet reinforcing.

Rolling Back—The front end-roller automatically flips up to support the screed off the concrete when the operator lifts the handle, making it simple to roll back for a second pass.



Screeding a new third lane on a hill with 14-foot screed. Burlap was pulled along after screed to roughen surface.

Screeding 2-inch slump floor at new I.B.M. Owego Plant with 25-foot Stow screed.

13-foot screed on two lane bridge. (Note that a pipe was used for the rail in the middle.)

USING VIBRATING SCREEDS. A vibrating screed is used to strike off concrete surfaces and at the same time vibrate the concrete. Because of the vibration, stiff concrete (even two-inch slump or less), can be placed and struck off more efficiently and economically than by hand methods.

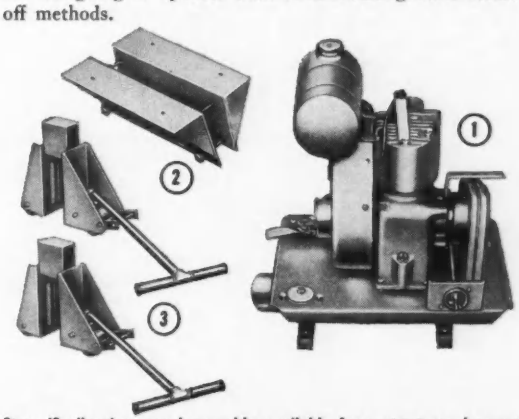
A vibrating screed consists of a vibrating unit mounted on a beam and a pair of end roller and handle assemblies. The vibration is transmitted through the length of the beam directly to the concrete. There is no transverse movement of the beam. The screed is merely drawn directly forward with the end rollers riding on the forms. The Stow screed can be obtained either complete with the beam or as a package assembly without the beam. Complete directions are shown in Stow's Catalog for building your own wooden prestressed screed beam.

ADVANTAGES OF VIBRATING SCREEDS. A Stow vibrating screed, because it does not have transverse movement, permits the building of any reasonable crown or grade into the bottom of the beam to conform to the requirements of the slab.

Vibrating screeds not only strike off the surface and shape it as they are advanced, but they vibrate the concrete at the same time. This means that all of the advantages of vibration are obtained, such as greater density and compaction of the concrete. Because of the vibration, a much stiffer mix can be struck off (two-inch slump or less is recommended). Such stiff mixes are highly impractical to handle by hand methods. A stiff mix, of course, makes a much stronger concrete. Stow vibrating screeds have rubber vibration dampers between the end roller assemblies and the beam which rides slightly above the forms. This practically eliminates vibration from being transmitted to the forms.

A means is provided to make it simple to raise the beam up slightly off the surface. On the Stow screed the front rollers are balanced in such a way that by just lifting up on the handle, it pivots the roller into a position that holds the beam up off the concrete. This is important since it makes it simple to roll the screed back for a second pass. It also makes it possible to stop the screed at any time without any danger of over-vibration.

Not only do vibrating screeds produce a better slab, but they save the contractor a considerable amount of money because of the speed at which they operate. Experience has shown that with the same crew, a contractor, even on concrete bridge decks, can often cut his production time almost in half. Also, of course, vibrating screeds are much less fatiguing to operate than back-breaking hand strike-off methods.



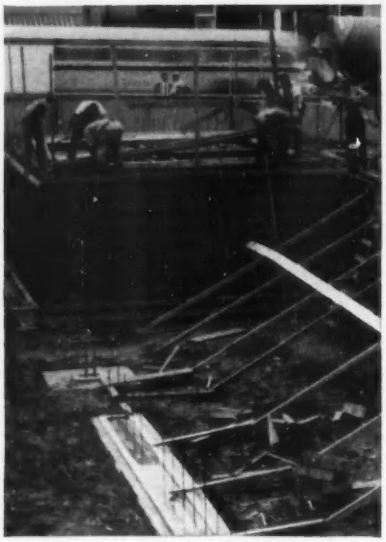
Stow J5 vibrating screed assembly available for contractors who want to build their own beams. Consists of item (1) a 2½ HP vibrating unit, item (2) brackets for engine mounting, item (3) a pair of end rollers, handles and necessary bolts. (Notice vibrating head underneath engine.)

For more technical data on Stow vibrating screeds, contact your Stow Distributor listed under "Concrete Vibrators" in the yellow section of your phone book, or write for Form 587 and Cat. 580.

STOW MANUFACTURING CO.
354 Shear Street **Binghamton, N. Y.**

For more details circle #221 on mailing card.

Commercial Forming

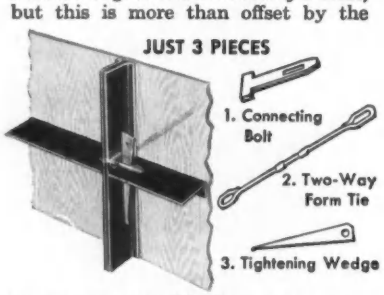


Symons Forms Help Contractor Speed Work on Bank Job

Used to Pour Foundation, Vaults & Retaining Walls

Designer and builder, Western Bank Contractors, Inc., Kansas City, Mo., used concrete to provide new look for banking in Kansas City. 4,000 square feet of Symons Steel-Ply Forms were used to speed construction of the foundation, vaults & retaining walls on this new $250,000 Community State Bank of Kansas City, Mo.

Initial cost of Symons Steel-Ply Forms is higher than Wood-Ply Forms, but this is more than offset by the



many reuses possible. Low-cost-per-use plus easier handling and stacking are reasons for the increasing demand.

Symons Steel-Ply Forms can be rented with purchase option. Steel-Ply Form Catalog FREE upon request.

Symons

SYMONS CLAMP & MFG. CO.

4271 Diversey Avenue, Dept. E-8
Chicago 39, Illinois

For more details circle #222 on mailing card.

equipment and tools

For additional free information mail cards facing page 16.

Outer Mold for Plastic Liners

Plastic form liners, according to this manufacturer, need rigid support to insure a true product since the expansion and contraction qualities of plastic differ from those of concrete. Metal has been found to be the ideal material. A permanent metal outer mold for holding plastic form liners is now available. The manufacturer is also equipped to custom build concrete forms out of either plastic or metal or a combination of both. **Aero Welding & Manufacturing Company, Inc., 800 North Russell Avenue, Aurora, Illinois.**

Cleaner and Etcher

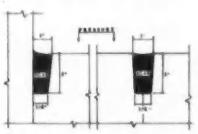
Greasup, a chemical compound, removes grease, oil, wax and other impurities from concrete floors, walls or ceilings. If etching is required, as when new concrete is to be bonded to old, a second preparation, Alprep, is then applied. **Berylex National Sales, Division of Harry Warde & Company, Inc., P. O. Box 33, Kansas City 3, Kansas.**

Bonding Agent

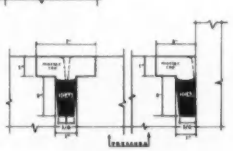
A new adhesive admix, when mixed with cement, is said to make easier troweling and produce smooth, long lasting, easy-to-paint floors. It is also achieves good results in repairing cement floors, drives, walks and steps or in resurfacing walls with new textures or floors with colored cement. It may be used to fill cracks in concrete or for replacing loose flagstones and tiles. It is also useful for repairing or resurfacing stucco, masonry or plaster surfaces. **Wilhold Products Company, 678 Clover Street, Los Angeles 31, California.**

Make Watertight Joints with IGAS

Igas Joint Sealer is a non-meltable. mastic waterstop that is easily applied to joints after the concrete has hardened. Igas will not dry out or become brittle when subjected to climatic changes. It can be placed in vertical, horizontal and overhead joints, thus forming an effective, watertight seal. Igas is ideal for foundations, basements, swimming pools, tunnels, etc. For complete information about Igas, write for Bulletin IS-56.



Water Reservoirs
Tanks
Parking Decks



Basements
Tunnels
Retaining Walls

Ad 26-5

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equipment and tools

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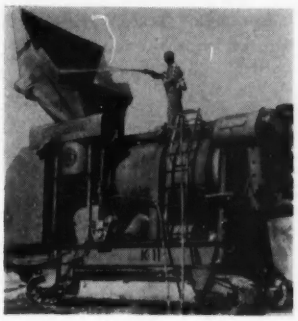
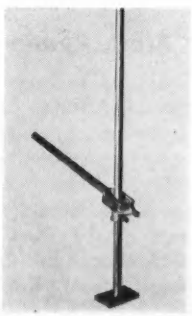


Pump

Illustrated here is a Marine Products Duraflex 6600 pump installed on a paver as a wash-down pump. Paver, scraper and finishing machines are kept clean by its use. The volume and pressure provided by the pump makes the job of wash-down simple, fast and complete. **Marine Products Company, 515 Lycaste, Detroit 14, Michigan.**

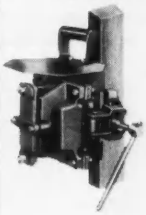


Steel Stake Puller

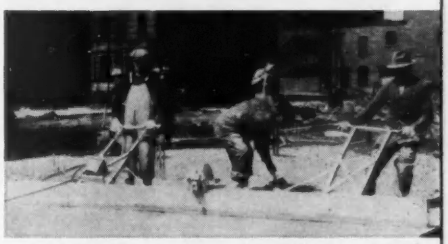
This stake puller has been designed for the easy removal of Symons steel stakes from hard or frozen soil. The hooked lever arm of the puller is inserted through a rectangular slot in the top of the stake. The puller operates in much the same way as an automobile bumper jack. Its total weight is 10 pounds. **Symons Clamp & Manufacturing Company, 4249 West Diversey Avenue, Chicago 39, Illinois.**

SYNTRON

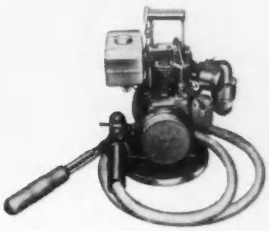
CONCRETE VIBRATORS



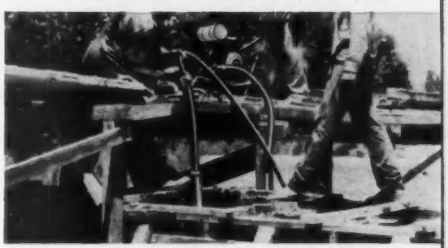
Electromagnetic Concrete Form Vibrators



V-55 Vibrator used to make a Vibrating screed



Electric or Gasoline Mass Concrete Vibrators



Gasoline Flexible Shaft Concrete Vibrator used in large footer form

for uniform compacting and settling concrete

SYNTRON Electromagnetic Concrete Vibrators provide a positive vibrating action that insures uniform compacting and settling of concrete. Easily attached to concrete pipe forms, block making machines, screeds, wall forms, etc. Available are sizes for every job. SYNTRON Mass Concrete Vibrators are ideal for settling concrete in narrow forms, footers, columns, foundations, etc. Flexible shaft with vibrating head is easily placed into forms. Available with 1½ or 2 hp. Electric Motor or 5 hp. Gasoline Motor. Flexible shafts available in lengths from 12 to 36 ft.

Syntron can help you with problems involving . . .

- Vibrators (bins, hoppers, chutes)
- Vibratory Feeders
- Vibratory Screens
- Shaker Conveyors
- Vibratory Elevator Feeders
- Weigh Feeders
- Packers and Jolters
- Hopper Feeders
- Lapping Machines
- Rectifiers (Silicon and Selenium)
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- Sinuated Wires
- Shaft Seals
- Electric Hammers
- Concrete Vibrators
- Paper Joggers

Syntron Sales and engineering service is available from 36 representatives throughout the United States. Take advantage of their willingness to work with you.

For more information write for complete catalog . . . *Free*

SYNTRON COMPANY

323 Lexington Avenue — Homer City, Penna.

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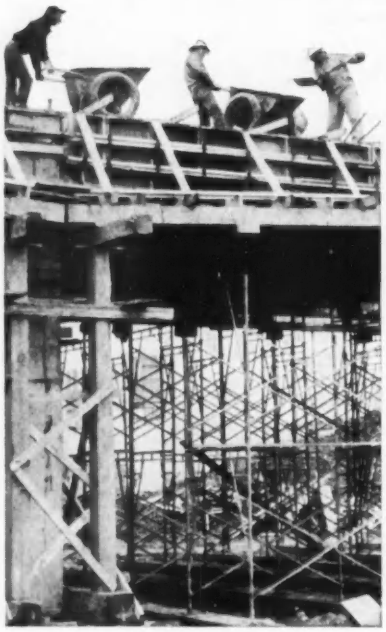
Bridge Forming



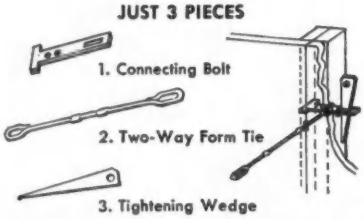
Symons Forms Cut 100 Days Off Bridge Forming Job

Ease of Erecting and Stripping Reduces Pouring Time

Contractor Lee Hoffman, Beaverton, Oregon, was given 320 days to pour 4,000 cubic yards of concrete for a bridge over Myrtle Creek in Oregon. Job was complete in 220 days or only ⅔ the time allotted.

Harry Pajutte, Chief Engineer for Hoffman, credits the ease of erecting and stripping Symons Standard High Strength Forms with contributing substantially to cutting pouring time, reducing number of men required on job, and providing greater mobility for the pouring equipment. Only

JUST 3 PIECES



3,144 square feet of panels were required for the 160,000 square feet of forming.

Symons Forms, Shores and Column Clamps can be rented with purchase option. Facts on Symons products and engineering service available upon request.

Symons

SYMONS CLAMP & MFG. CO.

4271 Diversey Avenue, Dept. E-8
Chicago 39, Illinois

For more details circle #222 on mailing card.

equipment tools and materials

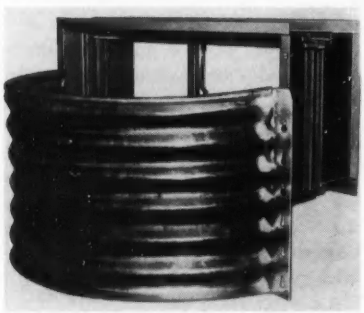
Additional free information concerning these items may be obtained by mailing the reader service cards located between pages 16 and 17.

Motor-in-Head Vibrator

A completely sealed vibrator head is featured in a rugged 60-cycle motor-in-head vibrator. The casing acts as a handle, and a completely covered off-on switch is placed 7 feet from the head. The universal motor powers the head at 12,000 to 15,000 vibrations per minute and shuts off automatically in case of overload. **Stow Manufacturing Company, 354 Shear Street, Binghamton, N. Y.**

Buck Window

This steel combination basement window with integral pouring form and straight or round window wells is lightweight and can be installed by one man. Steel window bucks are not required, eliminating the need for stripping, cleaning and hauling steel or wood bucks. Full wall thicknesses of 8, 9 and 10 inches are available and other thicknesses may be specially ordered. **Kewanee Manufacturing Company, Kewanee, Illinois.**

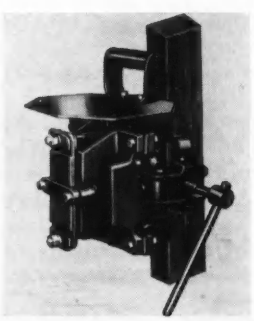


Mortar Stain Remover

A new chemical, packaged in a dispensing container, cleans bricks as effectively as does muriatic acid without the danger of burning workmen. No rubber gloves need be worn. Quart packages are available and other containers range in size from 5 to 55 gallons. **Goldblatt Tool Company, 1910 Walnut Street, Kansas City 8, Missouri.**

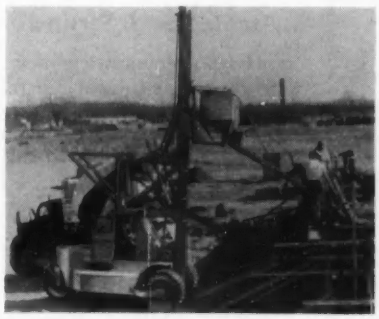
Clamp-On Form Vibrator

A clamp-on form vibrator is useful for vibrating concrete when pouring wall sections where internal-type vibrators are not practical. When used in pairs one unit can be moved to the next pour while the other is vibrating the form. The unit is available in two models, both producing 3600 vibrations per minute. **Syntron Company, Homer City, Pennsylvania.**



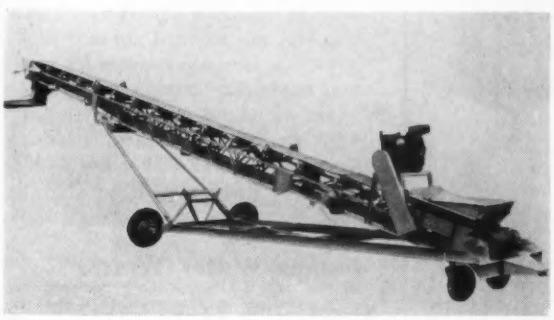
equipment and tools

For more information mail cards facing page 16.



Loader and Elevating Machine

The Model "C" Scoopmobile is said to be the only loader and elevating machine that can perform all functions of a front-end loader and also be quickly and easily converted to a material handling and elevating machine capable of high lifts. Interchangeable attachments include ¾-cubic yard buckets for loading bulk materials; ¾-cubic yard hoppers for distributing elevating and pouring concrete; 5-foot crane booms and lift forks. Drive power is applied to the front wheels. **Mixermobile Manufacturers, Inc., 8027 N. E. Killingsworth Street, Portland 20, Oregon.**



Portable Concrete Conveyor

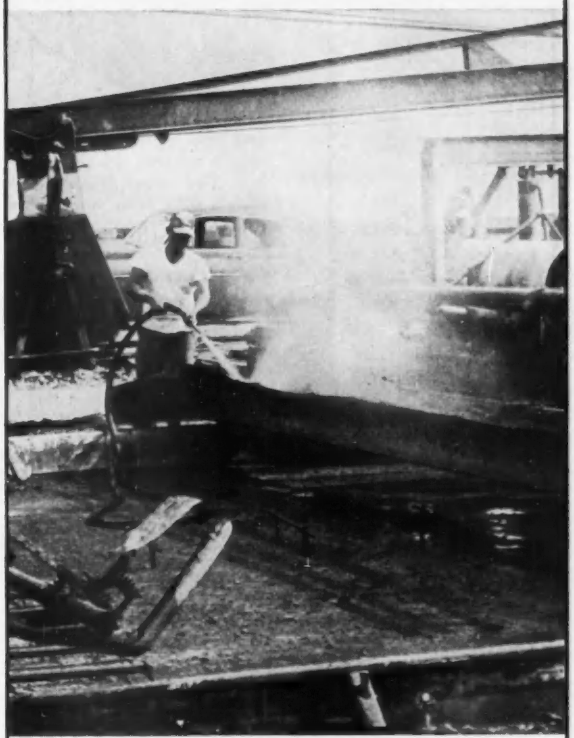
Especially recommended for placing concrete in long wall forms, the conveyor pictured here receives concrete directly from the transit mix truck. The unit is 8 feet wide in towing position, 40 feet long and has a delivery height of 23 feet. Capacities depend on slump of concrete, but average up to 40 cubic yards per hour. Foot end wheels are 360-degree swiveling type and back wheels lock in position at 90-degrees to the boom, or parallel to the boom and above grade for towing. **The Fairfield Engineering Company, Marion, Ohio.**

More EFFECTIVE WASHDOWN

for

TRUCKS • PAVING MACHINERY MIXERS • EARTH MOVERS

CLEANS RIGHT DOWN TO THE PAINT!



- **ELIMINATES CHIPPING AND SCRAPING**
- **EXPOSES ALL LUBRICATION FITTINGS**
- **KEEPS EQUIPMENT LOOKING NEW**

This compact, portable washdown pump is powered by a four cycle gasoline engine. Can be used anywhere. Self-priming, no check valves. Delivery to 40 gpm—pressures to 150 psi.

WRITE FOR FREE ILLUSTRATED BOOKLET ON MODEL 6600 WASHDOWN PUMPS.

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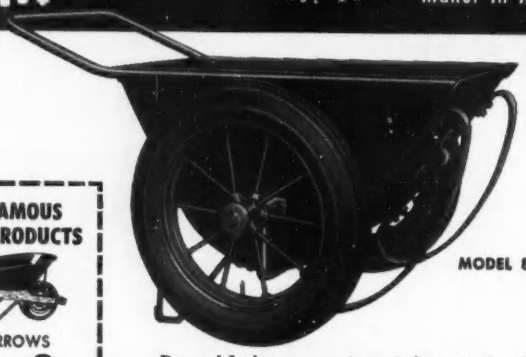
For more details circle #210 on mailing card.

CONCRETE CARTS by JACKSON TRADE MARK Oldest and Largest Wheelbarrow Maker In America



MODEL 8-88

OTHER FAMOUS JACKSON PRODUCTS

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WHEELS

GAS SALAMANDERS

MIXING BOXES

MORTAR PANS

Rugged Jackson concrete carts have perfect balance and rocker runners for controlled dumping. *Won't roll back on operator.* Equipped with drop axles. Steel or pneumatic tired wheels with roller bearings and zerk fittings. Available in many models with 6, 8, or 10½ cu. ft. heaped capacity.

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Jackson Manufacturing Co. • Harrisburg, Pa.

STEEL STAKES by dee

SLASH COSTS on: Flat Work, Curbs Footings, Bracing

STOP THIS WASTE

- Solid Steel Stakes . . . Always drive straight in any type of ground
- 12 Nail Holes, 1 inch on center allows nailing at any point
- Will not twist or bend
- Set up and strip 10 times faster
- Easiest to pull out
- No clean-up after stripping
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Save Material and Labor Make More Money

dee Concrete Products Co.
Engineered Manufacturers
670 N. Michigan Ave., Chicago 11, ILL.

For more details circle #203 on mailing card.

equipment and tools

For additional free information mail cards facing page 16.

Prestressed Strand

High strength, stress-relieved 7-wire strand for prestressed concrete is now being produced at the Leschen plant of H. K. Porter Company in St. Louis. The latest techniques of quality control both in the production of the wire and the manufacture and stress-relieving of the strand assure a product that meets or exceeds ASTM and all state specifications, according to the manufacturer. **Leschen Wire Rope Division, H. K. Porter Company, Inc., 2727 Hamilton Avenue, St. Louis 12, Missouri.**

Concrete Cleaner

A new product called Crete-Prep is a patented, non-alkaline liquid formula for cleaning, etching and sealing such masonry surfaces as concrete, brick, stucco, stone, ceramic tile and concrete block. Without generating objectionable odors or fumes, the product is said to restore original color and appearance, and to effect microscopic sealing of concrete surfaces to lessen dusting and dampness through drawing action. According to the manufacturer this material not only serves to prepare concrete surfaces for painting, waxing or staining, but also removes oil, grease, rust, weathering and soil. **Concrete Chemical Products Corporation, 317 Fisher Road, Jenkintown, Pennsylvania.**

Makes Water Wetter

According to the manufacturer, the addition of a very small amount of Veriwet concentrate changes the molecular structure of water so that its surface and interfacial tension is almost as low as gasoline or alcohol. Otherwise it retains all the characteristics of the original water. Veriwet water, in contrast to ordinary water, diffuses instantly, spreads over and wets such hard-to-wet materials as cement and silica. **Deynor Corporation, 1 Depot Plaza, Mamaroneck, New York.**

literature

FREE copies of these items may be obtained by mailing the reader cards facing page 16.

Prestressed concrete. Construction stories of 16 outstanding prestressed concrete projects in this country and abroad illustrate the almost unlimited application of prestressed concrete. Photographs and job stories cite the role played by Pozzolith in achieving the concrete qualities required for prestressed work. A prestressed lift slab, 120-foot prestressed bridge girders, and a 2-million gallon prestressed water tank are some of the outstanding projects covered. Both pretensioned and post-tensioned projects are featured in this new 20-page book, No. 13. The Master Builders Company, 7016 Euclid Avenue, Cleveland 3, Ohio.

Forming equipment. An 8-page booklet, F1060, is devoted to a description of Simplex forms, which are 1⅛-inch plastic-impregnated panels 4, 6, 8 and 10 feet in height. Hardened steel bars running the full panel width add extra strength and are integral with the locking levers that secure the forms and tie wires. The manufacturer claims that 3 men can set up forms for walls of a 120-foot foundation in one and a half hours. Pretty girls illustrate this booklet, along with pictures of the equipment itself. Simplex Forms System, Inc., 5600 Industrial Avenue, Rockford, Illinois.

Testing apparatus. A 6-page bulletin, CT-711, illustrates a wide range of portable and laboratory machines for testing concrete cylinders, blocks, beams and similar construction materials. The machines range in capacity from 200,000 pounds to 400,000 pounds. Soiltest, Inc., 4711 West North Avenue, Chicago 39, Illinois.

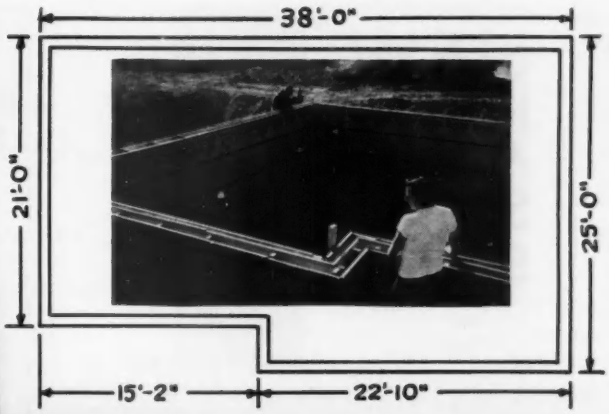
Admixtures. "Proper Use of Concrete Admixtures" is the title of a 20-page booklet which deals with the selection of proper admixtures, concrete uniformity, and quality control. Field tests are described and evaluated, admixtures are listed and specifications given for each, and a section is devoted to conclusions. The booklet is filled with information of value to anyone who handles concrete. Sika Chemical Corporation, Passaic, New Jersey.

Waterproof membrane. A homogeneous waterproofing membrane that is low in cost, tough, impervious to moisture, acids and alkalies, and extremely flexible at low temperatures is described in folder 7A1. It is recommended for flashings, lining canals, preventing water seepage through floors and as underground pipe and tube wrap. Glas-Kraft, Inc., Mill Street, Lonsdale, Rhode Island.

Shoring in highway construction. Contractors are finding that steel scaffolding equipment, properly applied, assures greater safety, efficiency and economy in road and highway building. Bulletin G 208 illustrates the use of Trouble Saver Sectional Shoring for this purpose. The Patent Scaffolding Company, Inc., 38-21 12th Street, Long Island City 1, New York.

CAN YOU MATCH THIS TIME?

ONLY 22 MAN HOURS TO ERECT, POUR AND STRIP THIS TYPICAL FOUNDATION



On-the-job reports from Simplex users indicate genuine enthusiasm for the "world's fastest method of concrete forming." Typical is the case of a contractor* who handled the foundation shown in a mere 22 man hours. Using 4 men, inner and outer forms went up straight and true in 1½ hours . . . pouring took 2½ hours . . . stripping 1½ hours! This man pocketed a neat profit and was ready to tackle another job in short order. How about you? Are you making such fast, money-making progress in your operation?

*Name on request.

- *Free Engineering Service*—Send your specifications for form layout and quotation, plus recommendations of our staff. No obligation in any way.
- *Send for Free Bulletins*—You'll want all the facts. Your request will bring complete literature on Simplex Forms and accessory equipment.
- *Choice Openings*—You can also make a profit selling Simplex. We have openings for dealerships in some areas. Write today for information.

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Simplex FOOT-A-MINUTE forms

SIMPLEX FORMS SYSTEM, INC.
5603 INDUSTRIAL AVE.
ROCKFORD (Loves Park) ILLINOIS

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literature

FREE copies of these items may be obtained by mailing the reader cards facing page 16.

Wire rope. "How to Be a Wire Rope Expert" describes in easily understandable language the basic principles governing the selection of the proper rope construction for any job. The booklet lists factors to be considered and shows how they can be balanced for best possible efficiency for a particular job. A device for determining the best relationship of rope size to sheave or drum size is also illustrated. Leschen Wire Rope Division, H. K. Porter Company, Inc., 2727 Hamilton Avenue, St. Louis 12, Missouri.

Calcium chloride. A clearly written, pocket-sized booklet "Better Concrete All Year Round with Columbia Calcium Chloride" explains the advantages of calcium chloride in concrete, and gives complete directions about how and when to add it to the mix, and in what quantity. This manufacturer's product is packaged for convenient, simple measurements and the booklet includes information on this. Proper curing procedures and handling and storage of calcium chloride are also explained. Columbia-Southern Chemical Corporation, One Gateway Center, Pittsburgh 22, Pennsylvania.

1958 tool catalog. An 88-page catalog, "Tools for the Trowel Trades," fully describes and illustrates over 1,200 tools. New tools and equipment which have been added recently to this manufacturer's line are included. Goldblatt Tool Company, 1910 Walnut Street, Kansas City 8, Missouri.

Basement windows. No bucks are required for installing this manufacturer's windows in poured foundations. An adapter makes provision for wall thicknesses of 8, 9 and 10 inches, requires no stripping, can be assembled and installed by one man and is shipped flat for easy storage. Described in a bulletin available from New Monarch Machine and Stamping Company, 406 S. W. Ninth Street, Des Moines 9, Iowa.

Operate a prestressed concrete plant? Booklet No. 331 presents questions to be answered when investigating the possibility of operating a prestressed concrete plant. This firm offers a survey and report covering requirements, costs and profits of such an operation in your locality. Leap Associates, P. O. Box 1053, Lakeland, Florida.

1958 fir plywood catalog. This three-part, 20-page catalog presents basic information on fir plywood standand grades and specialty products for architects, engineers, builders, product design engineers, and building code officials. A section is devoted to the design of fir plywood concrete forms. Douglas Fir Plywood Association, 1119 A Street, Tacoma 2, Washington.

Fly ash. Booklet 3-B-2 gives the technological reasons and requisite data that show how and why Chicago fly ash is an effective pozzolan for improving concrete mixes. This is an informative and interesting discussion of the use of fly ash. Chicago Fly Ash Company, 228 North LaSalle Street, Chicago 1, Illinois.

NEW
Hi Carbon Alloy
Steel Stake

Bracing
Footings
Curbs
Gutters

12, 18, 24, 30, 36 and 42 inch lengths.

Stake can be placed flat against lumber for secure nailing.

Symons

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We will be glad to send contractors a sample 12", 18", or 24" stake if request is received on company letterhead. Please include 50c, 75c or $1.00 for 12", 18", or 24" stake to cover cost of postage and handling.

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perfectly **cured and hardened**
CONCRETE
at a cost savings
with DEMICON *Cure Hard*

One application of DEMICON Cure-Hard to freshly poured concrete surfaces will give you:

a perfect membrane that retains moisture and prevents cracking

a dust-free, chemical-resistant, hardened surface

a cost savings—material applied for less than 1c per square foot

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For FREE Information write direct or use Reader Service Cards

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NEW

FOR PRESTRESSED CONCRETE

FLEXON STRESS-FLEX TUBING

- *Specially Designed* for use in post tensioning concrete
- *Easy Field Use* because its flexibility is right for prestressed concrete
- *Proven* under field conditions
- *Costs Less*

Here's flexible steel tubing you can use with confidence in prestressed concrete . . . yet it costs you less than ordinary tubing. In Flexon Stress-flex you get the strength and flexibility you need —you don't pay for unneeded extra steel. And it's backed by over 56 years' experience in flexible tubing. Ask your nearby Flexonics Representative for full information or write direct.

RT-13

Flexonics *Corporation*

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In Canada: Flexonics Corporation of Canada, Limited, Brampton, Ontario • Also Manufacturers of Rubber and Metal Hose Assemblies • Expansion Joints • Aircraft Components

For more details circle #206 on mailing card.

equipment and tools

For additional free information mail cards facing page 16.

Sealants

Polysulfide rubber sealants are recommended for filling joints on airport runways, repair of dam faces and sealing joints of walls laid up with granite, marble and limestone, according to one manufacturer. Improvements in handling techniques have eliminated the need to mix components on the job and increased the working life of the compound, especially at high temperatures. While the cost of such sealants is relatively high, joints caulked with these materials will last as long as 20 years instead of needing renewal every 2 or 3 years. **L. Sonneborn Sons, Inc., 404 4th Avenue, New York 16, New York.**

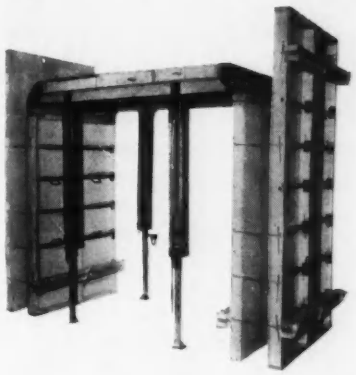
Epoxy Resin Bond

Sta-Crete epoxy-thiokol resins, according to the manufacturer, are being used with good results for the restoration of spalled and cracked surfaces of concrete bridges, beams, buildings, highways, as well as for such unusual purposes as sticking traffic line markers and raised traffic bars to highway surfaces. When the product is used as an adhesive and filler, tests prove it to be stronger than the concrete itself. Used in combination with a companion product called Sta-Crete aggregate, the adhesive material forms a non-shrinking, acid and alkali proof plastic coating which can be feather-edged to a 32nd of an inch. **Sta-Crete, Inc., 115 New Montgomery Street, San Francisco 5, California.**

All-New Vibrator

Among the features of the all-new Viberette high-frequency, low-amplitude concrete vibrator are portability, interchangeability, lightness and the availability of a wide range of shaft lengths and head sizes. The motor operates on either AC or DC current and is fan cooled. Shafts are available in lengths ranging from 1 to 20 feet, and new heads are offered having diameters of 1 inch and 1-5/16 inches. **Viber Company, 726 South Flower Street, Burbank, California.**

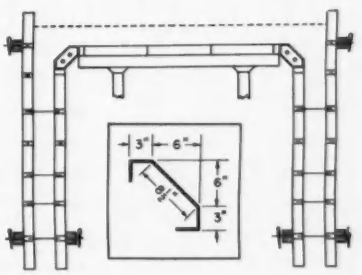
Culvert Forming



Symons Develops New Haunch Form for Culverts

Symons Safety Shores Used to Support Slab

Symons now has a new 9 x 9 inch steel haunch section designed to connect Symons standard wall panels and slab panels for the monolithic pouring of culverts. This new section provides for a 3-inch face on the roof slab and



on the wall with a 45-degree-angle surface 8½ inches wide between wall and roof. No built-up forms or other special equipment is necessary.

Made of 11-gauge hot rolled steel this new section is available in 4, 6, and 8 foot lengths. It can be used with either metal frame or wood frame forms. Symons regular form hardware is used for securing the steel section to Symons standard forms. No special fittings are required.

Symons forms, shores and column clamps may be rented with purchase option. FREE literature on Symons products is available upon request.

Symons

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